Exelon Generation®

Oyster Creek
Route 9 South
P.O. Box 388
Forked River, NJ 08731

10 CFR 50.73

RA-17-052

August 31, 2017

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk or O-8B1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Licensee Event Report (LER) 2017-002-00, "Manual Scram due to Degraded Main Condenser Vacuum."

Enclosed is LER 2017-002-00 reporting the manual reactor scram due to degraded main condenser vacuum, which occurred on July 3, 2017.

This event did not affect the health and safety of the public or plant personnel. This event did not result in a safety system functional failure. There are no regulatory commitments made in this LER submittal.

Should you have any questions concerning this report, please contact Gary Flesher, Regulatory Assurance Manager, at (609) 971-4232.

Respectfully,

For M. Gillin

Michael F. Gillin
Plant Manager
Oyster Creek Nuclear Generating Station

Enclosure: NRC Form 366, LER 2017-002-00

cc: Administrator, NRC Region I
NRC Senior Resident Inspector - Oyster Creek Nuclear Generating Station
NRC Project Manager - Oyster Creek Nuclear Generating Station

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NRR

NRC FORM 366 (06-2016) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Manual Reactor Scram due to Degrading Main Condenser Vacuum

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	05000
07	03	2017	2017	- 002	- 00	08	31	2017	FACILITY NAME N/A	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
N	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
100	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Gary Flesher, Regulatory Assurance Manager	(609) 971-4232

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
A	N/A	N/A	N/A	N	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO		N/A	N/A	N/A

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On July 3, 2017, at approximately 10:15 AM following a grid disturbance, a manual scram was inserted due to degrading main condenser vacuum because of an improper configuration of the Augmented Off-gas (AOG) System.

The loss of main condenser vacuum resulted when Operations personnel failed to execute procedural requirement to align the AOG system into a shutdown lineup. The loss of vacuum was caused by degraded Steam Jet Air Ejectors (SJAE) performance due to a blocked discharge path.

The AOG system tripped 11 hours earlier following a grid disturbance. During the trip, operations personnel failed to re-align the AOG treatment system to a shutdown lineup resulting in the AOG Flame Arrestor siphoning into the inlet piping which filled the lower section of the off-gas hold up line with water.

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NARRATIVE

Plant Conditions Prior To Event

Event Date: July 3, 2017 Event Time: 10:15 hours ET
Unit 1 Mode: Power Operation Power Level: 100%

Description of Event

On July 3, 2017 at 1015 hours a manual reactor scram was initiated due to degrading condenser vacuum. The loss of vacuum was initiated by the operations department failure to execute the procedural requirement to align the AOG system into a shutdown lineup. The SJAE discharge line was blocked by water from the AOG system. The AOG system tripped eleven hours earlier following a grid disturbance. During the trip, operations personnel failed to re-align the AOG system to a shutdown lineup resulting in the AOG Flame Arrestor siphoning into the lower section of the off-gas delay pipe.

Cause of Event

Operations failed to enter stop work criteria, made a non-conservative decision and did not execute a procedure in response to a trip of AOG. After the AOG system trip from the electrical transient, operations personnel misdiagnosed the AOG system lineup. The AOG system had partially isolated as designed with the recombiner blower still in service. To place the AOG system in a shutdown lineup, the system isolation valve had to be closed to separate the AOG building from the off-gas delay pipe. This isolation valve was left open and flame arrestor water siphoned back into the off-gas delay pipe causing a stall of the SJAEs and a subsequent loss of main condenser vacuum.

Analysis of Event

Following the manual scram actuation, all systems responded as expected; therefore, this event is of low safety significance.

An analysis did not determine an area where early detection via plant observable parameters would have stopped the event. An analysis of water usage and design is below.

A known operating characteristic on the system results in the flame arrestor getting pressurized on the process side up to 5 psig, (stem pressurization air sub-system). This pressure will cause the flame arrestor to siphon back into the AOG inlet line. A siphon will continue to backfill the suction lines due to the automatic makeup from the demineralized water system. Failure to isolate the inlet line to the flame arrestor with the system not in service allows water back flow to the off-gas process piping and fill the delay pipe. The delay pipe is the discharge piping from the SJAE process gas flow. Water filling the line resulted in the stall of the SJAE's that started at 0919 hours on July 3, 2017.

To block SJAE flow this line would have to fill up the lowest elevation of piping. This is approximately 8100 gallons of water. The earliest detection of changes in the plant would occur just as the pipe is filled with water blocking the flow and is consistent with operations observations at approximately 0825 hours on July 3, 2017.

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NARRATIVE

Corrective Actions

Exelon took the following corrective actions:

1. Immediate procedure changes to alarm response and operating procedures were performed to provide clear direction for a trip of the AOG system.
2. Industry Benchmarking was completed and the Operations department has implemented an integrated decision-making model.
3. Reinforcement of key operations fundamentals and human performance boards with each operator.

Previous Occurrences

A previous event occurred on July 26, 2012 during startup from Forced Outage 1F29. The delay pipe filled with water prior to or during plant startup resulting in a six-hour delay in establishing condenser vacuum. A procedure change was put in place to verify the delay pipe is draining correctly prior to every plant start up.

Component Data

Component	IEEE 805 System ID	IEEE 803A Component
N/A	N/A	N/A